

<b>Topic/Lesson:</b>	<b>Humans and Sturgeon: Great Debate</b>
<b>Subject:</b>	Historical human impact on sturgeon populations
<b>Author:</b>	Rob Yeomans
<b>Time Duration:</b>	One to two class periods
<b>Overview:</b>	<p>People have adversely affected the sturgeon population due to the actions they have taken over the course of history. These actions were done for a social purpose with no ill intent against nature. The class will form groups that represent each social issue. The groups will research a local connection to their issue and understand why the action was taken from a human standpoint. Then, in debate style, each group will defend their position to the class as to how important their issue is for society (even if it was one hundred years ago). The class will then decide which group should cease their action based on the needs of society and to minimize the most damaging effects on the sturgeon population.</p>
<b>Objectives:</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Research a social issue related to sturgeon.</li> <li>• Defend their social issue in a debate.</li> <li>• Make logical, social decisions.</li> <li>• Create connections between the sturgeon plight and local municipalities.</li> <li>• Create connections between the needs of people and the environment.</li> </ul>
<b>Materials:</b>	<ul style="list-style-type: none"> <li>• Laptops with internet connection</li> <li>• Stop watch</li> </ul>
<b>Procedures:</b>	<p><b>Day before the debate (about 20 minutes)</b></p> <p>Ask the class if they know of any human impacts that have affected fish in the local rivers. List them on the board. When finished, introduce the class to the sturgeon and explain how its habitats include rivers, estuaries and open oceans and how their population has dwindled primarily due to the actions taken by people over the course of the last 200 years. Add any actions the class did not include to the list on the board. Tell the students that they must research one social action to understand why this action was taken from a social point of view. The next day, the class will hear each group's defense, interject if necessary, and in the end, vote to eliminate one human action. Class will ultimately figure out ways that each group</p>

can coexist with the sturgeon with the other groups. The class must break into groups to represent:

- Dams
- Dredging
- Commercial fishing for flesh/roe
- Bycatch
- Water pollution due to industrial sites
- Hydroelectric power
- Sturgeon

Once in groups, students must divide the project among the group members. Homework is to research a local representative of their group. Research must answer:

- Why the action was undertaken?
- Where did this occur (local)?
- When did this action occur?
- Who made the decision to undertake the action (government officials, scientists, general public)?
- What was done to complete the action?

For the sturgeon group, they should try to find out how these actions affect Atlantic sturgeon and find any incidents that have been reported. Groups must generate information that supports the reasoning for humans to partake in their action.

**Day of Debate (next class)**

Class should form their desks into a circle. Teacher should state the debate rules. Then, each group presents their defense to the class. The class may interject with questions at the end of each group's presentation. The teacher is the moderator who should watch for and grade each group/student on:

- Time length
- Content and use of facts
- Rebuttal
- Respect for the other groups
- Organization
- Audience participation

**When the debate is over, the teacher should question the class on:**

- 1) How can people change their current actions to better coexist with the remaining sturgeon population to not further reduce it and to possibly increase it?
- 2) What ideas do they have regarding the impacts of present day human actions undertaken before research has been done on the

	<p>effects of the action on the environment?</p> <p>3) What are some of the other past human actions that affect the environment?</p> <p>4) Looking into the future, what should be done at the social level before any human action is undertaken that might influence or affect the environment?</p>
<b>Conclusion:</b>	<p>For homework, each student should write their argument as to which group should totally cease their actions due to their effects on sturgeon and the needs of society during that time period. The assignment grades can be based on the rubric below and how well thought out the argument was and what aspects were considered.</p>



Category	4	3	2	1
<b>Information</b>	All information presented in the debate was clear, accurate and thorough.	Most information presented in the debate was clear, accurate and thorough.	Most information presented in the debate was clear and accurate, but was not usually thorough.	Information had several inaccuracies OR was usually not clear.
<b>Use of Facts/Statistics</b>	Every major point was well supported with several relevant facts, statistics and/or examples.	Every major point was adequately supported with relevant facts, statistics and/or examples.	Every major point was supported with facts, statistics and/or examples, but the relevance of some was questionable.	Every point was not supported.
<b>Organization</b>	All arguments were clearly tied to an idea (premise) and organized in a tight, logical fashion.	Most arguments were clearly tied to an idea (premise) and organized in a tight, logical fashion.	All arguments were clearly tied to an idea (premise) but the organization was sometimes not clear or logical.	Arguments were not clearly tied to an idea (premise).
<b>Understanding of Topic</b>	The group clearly understood the topic in-depth and presented their information forcefully and convincingly.	The group clearly understood the topic in-depth and presented their information with ease.	The group seemed to understand the main points of the topic and presented those with ease.	The group did not show an adequate understanding of the topic.
<b>Rebuttal</b>	All counter-arguments were accurate, relevant and strong.	Most counter-arguments were accurate, relevant, and strong.	Most counter-arguments were accurate and relevant, but several were weak.	Counter-arguments were not accurate and/or relevant
<b>Respect for Other Team</b>	All statements, body language, and responses were respectful and were in appropriate language.	Statements and responses were respectful and used appropriate language, but once or twice body language was not.	Most statements and responses were respectful and in appropriate language, but there was one sarcastic remark.	Statements, responses and/or body language were consistently not respectful.
<b>Presentation Style</b>	Group consistently used gestures, eye contact, tone of voice and a level of enthusiasm in a way that kept the attention of the audience.	Group usually used gestures, eye contact, tone of voice and a level of enthusiasm in a way that kept the attention of the audience.	Group sometimes used gestures, eye contact, tone of voice and a level of enthusiasm in a way that kept the attention of the audience.	One or more members of the Group had a presentation style that did not keep the attention of the audience.